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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)

1998 Biennial Regulatory Review --)
Amendment of Part 18 of the Commission's)
Rules to Update Regulations for RF)
Lighting Devices)

ET Docket No. 98-42

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**REPLY COMMENTS
OF
CONSTELLATION COMMUNICATIONS, INC.**

Constellation Communications, Inc. ("Constellation"), by its counsel, hereby submits these Reply Comments in the above-captioned proceeding which seeks to amend Part 18 of the FCC Rules¹ to update regulations for radio frequency lighting devices.² In these Reply Comments Constellation supports some of the initial comments in this proceeding that express concern that new types of RF lighting operating in the 2400-2500 MHz band may have an adverse impact on other authorized services. Specifically, Constellation is concerned that these RF lighting devices may harm its downlink operations in the 2483.5-2500 MHz band.

Constellation is currently constructing a low-Earth orbit satellite system in the Mobile Satellite Service ("MSS") Above 1 GHz.³ The subscriber terminals operating with the system will receive low level signals from the Constellation satellites in the 2483.5-2500 MHz band which is

¹ 47 C.F.R. § 18.101 *et seq.*

² *In the Matter of 1998 Biennial Regulatory Review -- Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting Devices*, ET Docket No. 98-42, Notice of Proposed Rulemaking (April 9, 1998).

³ *See Constellation Communications, Inc.*, 12 FCC Rcd 9651 (1998).

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allocated for MSS. The performance of these code division multiple access ("CDMA") links, and thus system capacity, is limited by thermal noise, internal code noise, and interference from other systems. It is therefore important that no additional source of significant noise be introduced into the 2483.5-2500 MHz band which would adversely affect the performance of the MSS receivers in this band.

A number of parties have filed comments expressing concern that the operation of RF lighting within the proposed limits could result in significant interference to existing licensed services.⁴ Constellation shares the concerns raised by these parties and believes that the proposed emission limitation rules are inadequate to protect MSS receivers operating in the 2483.5-2500 MHz band.

In particular, Constellation supports the comments filed by AMRC and CD Radio, both of whom are licensed to operate satellite digital audio radio service systems in the 2320-2345 MHz bands. Each of these parties includes a calculation of the effects of the proposed field strength limits on their respective systems. Following the methodology used by CD Radio in the Appendix to its comments,⁵ the following calculation illustrates the impact of the proposed emission limits on a Constellation mobile terminal receiving a CDMA voice signal when located 10 meters from a RF lighting device.

⁴ These parties include the American Radio Relay League, Inc. ("ARRL"), American Mobile Radio Corporation ("AMRC"), the National Association of Broadcasters ("NAB"), and Satellite CD Radio, Inc. ("CD Radio"). Similar concerns were expressed by parties interested in unlicensed services, including 3Com Corporation ("3Com"), ADTRAN, Inc., Aironet Wireless Communications, Inc. ("Aironet"), IEEE 802 LAN/MAN Standards Committee, Meticom, Inc. ("Meticom"), Part 15 Coalition, Symbol Technologies, Inc. ("Symbol"), and Wireless LAN Alliance ("WLANA").

⁵ Comments of Satellite CD Radio, Inc. dated July 8, 1998 at Appendix.

Electric Field Strength	300	dB(uV/m ²)
Constant Term	145.8	
Power Flux Density	-96.3	dBW/m ²
Antenna Gain	3	dBi
Frequency	2491	MHz
Speed of Light	300,000	km/sec
Wavelength	0.12	meters
Effective Antenna Aperture	0.002	m ²
Effective Antenna Aperture	-26.4	dB(m ²)
Interfering Power	-122.6	dBW
CDMA Signal Receive Level	-156.0	dBW
Interference-to-Carrier Ratio	33.4	dB
Receiver Noise Temperature	272.0	K
Noise Power in 16.5 MHz	-132.1	dBW
Interference-to-Noise Ratio	9.4	dB

With the interfering level more than 30 dB higher than the received CDMA signal level and almost 10 dB higher than the noise power in the receiver, Constellation believes that these RF lighting devices have the potential for causing harmful interference to mobile satellite receivers such as the ones that will be deployed for use with the Constellation system.

Comments in this proceeding indicate that RF lighting devices will likely proliferate, particularly along streets and roads where MSS terminals are likely to be used. Constellation believes that the establishment of a power flux density limit in the 2483.5-2500 MHz band would be a means to protect MSS receivers from harmful interference caused by RF lighting devices. An appropriate protection level would be to require the interfering power density to be 10 dB below the thermal noise density of a typical MSS receiver. For the parameters of the Constellation system used in the calculation above, this criteria would result in a power flux density of approximately -130

dB(W/m²) in a 1 MHz bandwidth at the MSS receiver. For applying this limit, a 10 meter separation between the RF lighting device and MSS receiver would be appropriate.

In conclusion, Constellation believes that the anticipated proliferation of RF lighting devices presents the danger of causing significant interference to MSS receivers licensed to operate in the 2483.5-2500 MHz band. For this reason, Constellation requests the Commission to include an appropriate provision in the rules, such as the power flux density limit indicated above, to protect MSS receivers.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert A. Mazer", is written over a horizontal line.

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Dated: August 24, 1998

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 24th day of August, 1998, a true and correct copy of the foregoing Reply Comments of Constellation Communications, Inc. was served by first class mail, postage prepaid, upon the following:

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